Pestic. Sci. 1998, **54**, 325

Introduction

Current Research at Zeneca Agrochemicals – Changing the Paradigm

As we approach the twenty-first century the problems and challenges that face society will put pressure on the life sciences to provide solutions. Perhaps none of these challenges is greater than the need to feed an increasing population safely and sustainably. The agricultural research community has played a substantial role in the progress made to date, but the significance of this role is not commonly recognised by society. Few people realise that the total area of land cropped has hardly changed over the last 40 years but during that time food output has trebled. This productivity improvement has saved from the plough an area equivalent to the total land area of the United States, Europe and Brazil. This represents one of the most environmentally important contributions made by man. Despite this success there is no room for complacency. It has been calculated that we will need to triple the yields again by 2040 to feed the predicted population. In order to achieve this ambitious target, Zeneca Agrochemicals, amongst others, is looking to bring to the market a variety of products based upon existing and new science. The output gains achieved in the twentieth century through plant breeding and the use of chemical pesticides and fertilisers will need to be surpassed in the twenty-first century if vast tracts of land are to be saved from the plough. Contributions to crop yield and quality from improved pesticide efficacy and from gene-based technology will be required to meet the needs of the next millennium.

This is a period in the history of the industry where revolutions in science and technology have brought us to the brink of exciting new opportunities. The advent of high-throughput screening and automated synthesis has provided us with the prospect of rapid evaluation of previously unimaginable numbers of new chemicals. Molecular biology and the genomic revolution open up whole new opportunities for the management of pests and disease infections. There is a merging of the traditional scientific disciplines such that key discoveries are being made at the interface between chemistry and biology. These will provide us with the tools to tackle the challenges ahead.

The productivity gains and environmental benefits from the application of science and technology to providing the world's food are often overshadowed by the negative publicity associated with the use of pesticides or genetically modified crops. The agrochemical industry has a duty to be aware of the concerns of society in this area and to address these issues by applying excellent science to understand and minimise any risks associated with the introduction of new products. Effective communication of these efforts will form a necessary part of demonstrating commitment to this objective. This is the theme of this issue of *Pesticide Science*. Papers have been selected to illustrate the breadth of scientific innovation across all aspects of the discovery and development process for new crop protection effects within Zeneca Agrochemicals. They cover screening, biochemistry, molecular biology, chemistry, metabolism, formulation, environmental impact, resistance management and manufacturing support and are indicative of Zeneca's commitment to search for new products to meet the demanding agricultural and environmental targets which society will set for the twenty-first century.

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